DOCUMENT RESUME

ED 270 926 EC 182 923

AUTHOR Nisenboum, Jean M.; And Others
TITLE Prevalence and Speech Production Characteristics of Ankyloglossia in Preschool Children.
PUB DATE Nov 85
NOTE 8p.; Paper presented at the Annual Convention of the American Speech-Language-Hearing Association (12th, Washington, DC, November 22-25, 1985).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Communication Disorders; *Incidence; *Phonology; Preschool Education; *Speech Handicaps; Speech Therapy; Young Children
IDENTIFIERS *Ankyloglossia

ABSTRACT

The study investigated the prevalence and associated problems of ankyloglossia, characterized by restricted movement of the tongue usually due to the adhesion of the tongue to the frenum, among a preschool Head Start population (N=1,440). Ss were screened for six primary characteristics of the condition and of the 78 children who exhibited the condition, 36 were evaluated for speech production disorders. Prevalence was found to be 28 times greater than figures previously cited in the literature. Twenty percent of the Ss with ankyloglossia presented with phonological disorders, a percentage higher than would be expected based on sound study information. Findings suggested the importance of focusing on developing compensatory techniques in therapy. (CL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED270926

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
✓ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PREVALENCE AND SPEECH PRODUCTION CHARACTERISTICS OF ANKYLOGLOSSIA IN PRESCHOOL CHILDREN

Jean M. Nisenboum, Susan L. Hamilton, and Patricia G. MacIntyre
Cleveland Hearing and Speech Center

Controversy abounds in the literature concerning ankyloglossia and its effect on speech production. There is however, general agreement on the definition.

Horton (1969) has classified ankyloglossia by degrees. He defines mild ankyloglossia as a mucous membrane band with restrictions of movement; Marked ankyloglossia where both the frenulum and the underlying fibers of the genioglossus muscle are markedly fibrosed;and complete ankyloglossia as the rare condition where the tongue is actually fused to the floor of the mouth.

Catlin and Dehaan found that most contemporary writers regard true ankyloglossia as a real but uncommon condition. Most authors reviewed suggest an incidence of 1/2000 or .05%.

The present study was concerned with the prevalence of this condition in a preschool population and was designed to address the following 3 questions:

1. What is the prevalence and degree of ankyloglossia in a preschool Head Start population?
2. What % of children diagnosed with ankyloglossia exhibit associated speech deficits involving Lingua-dental, lingua-alveolor, lingua-palatal or velar sounds?
3. What % of children diagnosed with ankyloglossia exhibit phonological processing deficits?

EC182923

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY
Jean M. Nisenboum
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

METHOD

Subjects

One thousand, four hundred and forty Head Start children in the greater Cleveland area were screened by 15 Speech-Language Pathologists trained in the screening protocol. The six primary characteristics of ankyloglossia taken from the literature formed the screening test. Children exhibiting one or more of the symptoms listed below were identified as candidates for evaluation.

1. heart shaped bow or notch on tongue at rest of extension
2. frenum attached to tongue tip or anterior 1/3 of the tongue
3. frenum attached to lower alveolar ridge
4. a short thick appearence of ot the frenum
5. cannot elevate tongue tip to teeth
6. cannot lick upper lip with tongue

Screening prevalence was 5.4% (78/1440). Thirty-six of these 78 children were available for evaluation and served as the subjects for this study.

Procedures

The following evaluation battery was utilized to confirm or deny the presence and degree of ankyloglossia and to examine associated speed production disorders:

1. The Assessment of Phonological Processes (Hodson)
2. Ankyloglossia Sound Study (Catts, Nisenboum, Hamilton)
3. Oral Mechanism Examination- Tongue Exam Subtest (Dworkin-Culatta)

Three of the original Speech-Language Pathologists were selected to administer the evaluation battery. Tester reliability for prevalence of ankyloglossia was established at 100% and reliability for assessment of degree of ankyloglossia was established at 86%.

RESULTS

Prevalence of ankyloglossia determined after evaluation was 1.4% or twenty-eight times greater than what has previously been cited in the literature (.05%). Distribution of degree of ankyloglossia is show in Table I.

Percentages of associated speech deficits, obtained by placing the total number of misarticulation made by subjects over the total number of productions possible, are shown in Table II.

Twenty percent of the subjects exhibiting ankyloglossia presented with phonological disorders. Of the subjects represented in Table I, 19% of mild cases and 33% of marked cases presented with phonological disorders. The subject with complete ankyloglossia did not exhibit a phonological disorder.

DISCUSSION

This study demonstrated that the prevalence of ankyloglossia is much higher than previously reported in the literature. This study does support previous data which report complete ankyloglossia to be a less frequently occuring condition.

In reviewing the sound study data there appears to be no positive relationship between degree of ankyloglossia and number of misarticulations, since number of misarticulations did not increase with greater severity of ankyloglossia. In this study it appeared that children with ankyloglossia were using compensatory techniques, regardless of degree of ankyloglossia to achieve perceptually good sounds.

Finally, phonological deficits did appear at a high rate in this population. It is interesting to note that more of our subjects presented with a phonological disorder than would be expected considering our sound study information. This may be due to the fact that the effects of coarticulation were not assessed in

the sound study, since only initial position sounds were tested. It would also be expected that compensatory movements are easier to make in the initial position. Further research is needed into the relationship between ankyloglossia and a child's developing sound system.

Based on the results of this study we suggest that speech-language pathologists who work with children diagnosed as having ankyloglossia should focus on developing compensatory techniques in therapy before referring for or supporting a frenulotomy to improve speed production.

TABLE I: DISTRIBUTION OF DEGREE OF ANKYLOGLOSSIA

Degree of Ankyloglossia	Percentage of Subjects
Mild	80%
Marked	15%
Complete	5%

TABLE II: PERCENTAGES OF ASSOCIATED SPEECH DEFICITS BY PLACE OF ARTICULATION

Place of Articulation	Percentage of Misarticulation
linqua - dental	46%
linqua - alveolar	5%
linqua - palatal	28%
velar	5%

SELECTED REFERENCES

Block, J.R., The Role of the speech clinician in determining indications for frenulotomy in cases of ankyloglossia. New York State Dent. J., 34 (8): 479-81, 1968.

Browne, D., Tongue Tie. Brit. Med. J. 2: 952, 1959.

Catlin, F. O. and Dettaan, V., Tongue Tie. Otolaryng., 94, 548-557, 1971.

Dworkin, J. (1978, December) Differential diagnosis of motor speech disorders: Vol. II The clinical examination of the speech mechanism. Journal of the Student Speech and Hearing Association., 37-62.

Dworkin, J., & Culatta, R. (1980). Dwrokin-Culatta oral mechanism examination.

Hodson, B.W. The Assessment of Phonological Processes. Danville IL: Interstate Printers and Publishers, 1980.

Horton C.E., Crawford, H.H., Adamson, J.E. et. al: Tongue Tie, Cleft Palate J. 6: 8-23, 1969.

Lybolt, J., Unpublished research project, Northwestern University, 1974.

Mason, R. (1969) Improving the efficiency of the intra oral examination. Journal of the Tennessee Speech and Hearing Association, 14, 4-10.

Oldfield, M.C., Congenitally short frenula of upper lip and tongue. Lancet 1:528-530, 1955.

Oldfield, M.C., Tongue-tie. Brit. Med. I. 2:1181-1182, 959.

Pannbucker, M., Common Misconceptions About Oral Pharyngeal Structure and Function, Language Speech and Hearing Service in Schools. Vol. 16. no. 2, April, 1985.

Spencer, W.G., and S. Cade, Disease of the tongue. Pp. 17-20. London: H. K. Lewis and Co., Ltd., 1931.

Tuerk M., Lubet E.C., Ankyloglossia. Plast. Reconstruction Surg. 24:271-276, 1959.

Wallace, A. F., Tongue-tie. Lancet 2:377-378, 1963.

Weiss, C., Lillywhite, H., Gordon M. (1980) Clinical Management of Articulation Disorders. St. Louis. CV Mosby.

Young E.C. and Sacks, G.K., Examining for tongue tie: Clinical Pediatr., 298, 1979.

Prevalence and speech production characteristics of ankyloglossia in preschool children. Jean M. Nisenboum, Susan L. Hamilton, and Patricia G. MacIntyre, Cleveland Hearing and Speech Center. Paper presented at American Speech-Language Hearing-Association Convention, Washington, D.C., 1985.